

# Digital Triple Coincidence Positron Lifetime Setup with DRS4 and Its Benefits

Martin Petriska <sup>a)</sup>, Stanislav Sojak, Vladimír Kršjak and Vladimír Slugeň

*Institute of Nuclear and Physical Engineering, Faculty of Electrical Engineering and Information Technology,  
Slovak University of Technology, Ilkovičova 3, 81219 Bratislava, Slovakia*

<sup>a)</sup> Corresponding author: martin.petriska@stuba.sk

**Abstract.** A triple coincidence digital positron lifetime setup is commonly used in our laboratory for more than ten years. During its operation, several changes and upgrades were accomplished, which brings enhancement of timing resolution and decreasing setup complexity. Requirements of other laboratories, like automatic time measurement, were included in the QtPALS software developed at our institute. Benefits of triple coincidence, commonly used in background suppression in samples containing  $^{60}\text{Co}$ , are also in better time resolution, which outbalanced the speed of measurement. Used custom firmware in DRS4 allows using digital setup without external coincidence trigger chain.